**A Train that Flies**

*What kind of train can float in the air? The answer is one that runs on magnetic power.*

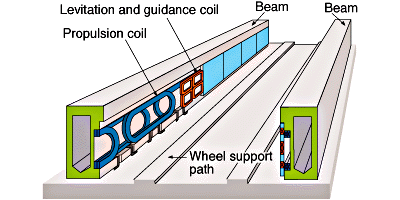
**Flying Along**



Picture yourself zooming across country at hundreds of miles an hour. If you pictured yourself in a jet plane, you need to change the picture. Instead, you are traveling on a train that flies through the air. This might sound like science fiction, but it is very real. Around the world, scientists have been developing maglev trains—trains that levitate, or rise and float, above a magnetic field.

**How Maglevs Work**

Just how do these trains work? To put it simply, the trains float over a track using the basic principles of magnets. Each end of a magnet is called a polarity, which is either positive or negative. Magnets with the same polarity repel each other. So, if you put the positive end of two magnets together, they push away from each other. Something very different happens when you turn one of the magnets around. With the positive end facing the negative one, the magnets will slam together. This happens because opposite polarities attract. Now, if you turn one of the magnets back and forth, you will repel and attract. This is how you create a wave of magnetic current.

The special track for the maglev train is called a guideway. There are two types of magnetized coils in the guideway wall. The levitation and guidance coil repels the large magnets on the train. The result is that the train levitates between .39 and 3.39 inches above the track, floating on a cushion of air. Once the train is raised and centered, power is supplied to the propulsion coil. Its polarity is constantly changed, causing a strong magnetic wave. It is this wave that pushes or pulls the onboard magnets of the passing train to move it along. So, the train is pushed by the guideway itself rather than by an engine.

**Great Promise**

Many believe that this kind of transportation holds great promise. For one thing, maglev trains are much faster than regular trains. They travel on air, so there is no friction. The lack of friction and the sleek design allow these trains to go more than 300 mile per hour. Regular trains go no faster than 130 miles per hour. On a maglev train, you could travel from Paris to Rome in just over two hours.

There are other advantages to these trains. The maglev train cars are less expensive to build than other railway cars, and there is little or no maintenance. In addition, the trains are fairly quiet compared to regular trains. In fact, passengers will not even notice the train vibrations. Another plus is how much energy is saved. These trains use far less energy than other forms of transportation, and they do not pollute the air. Finally, the maglev train has a good safety record. Collision is not likely because only sections of the guideway are made active as needed. Some experts believe that travel by maglev trains is 250 times safer than travel by other types of trains.

**Maglevs in Use Today**

It was over a century ago that maglev trains were first proposed. Yet, few countries have these train systems. One reason is that they are very expensive to set up. The first commercial maglev train operates in Shanghai, China. It opened to the public in 2003 and travels at an average speed of 267 miles per hour. Several other countries, such as Germany and Japan, have maglev train systems. And Japan recently announced plans to launch its first major maglev rail service in 2025.

What can you do if you want to ride a maglev train in the United States? You would have to go to Georgia. The American Maglev Company completed a model in Powder Springs, Georgia, in the summer of 2007. People from all over the country have visited the site. If you wish, you can schedule an appointment to take a ride on a train that flies. Then you too can be floating on air.

1. The author includes the section “Great Promise” to
2. describe how maglev trains are built.
3. explain the importance of traveling by maglev trains.
4. identify reasons why maglev trains are better than regular trains.
5. suggest that maglev trains are too expensive and dangerous to build.
6. Under which heading would you MOST LIKELY find information about where Maglev trains are currently found?
7. Flying Along
8. How Maglevs Work
9. Great Promise
10. Maglevs in Use Today
11. By reading the article and looking at the diagram, the reader can tell that Maglev trains
12. are pushed forward using large wheels.
13. have beams that lift passengers up to the train.
14. are powered by special coils using magnetic waves.
15. can run on the same kinds of tracks that regular trains use.
16. The author includes the photograph to
17. show readers what a maglev train looks like.
18. provide the location of the first maglev train.
19. teach readers how a maglev train works.
20. prove that a maglev train is fast.
21. The section “Flying Along” is included to
22. describe how the maglev train flies.
23. introduce the maglev train to the reader.
24. compare the maglev train to an airplane.
25. explain where a maglev train can be found.
26. Read these sentences from the article.

**Finally, the maglev train has a good safety record. Collision is not likely because only sections of the guideway are made active as needed.**

What does the word *collision* mean as used in the sentence above?

1. to fly
2. to crash
3. to build
4. to expand
5. Which country had the first operating maglev train?
6. China
7. Germany
8. Japan
9. United States
10. With which statement would the author MOST LIKELY agree?
11. Maglev trains will cause an increase in pollution.
12. Maglev trains are not safe because they are too fast.
13. Maglev trains are too complicated to work properly.
14. Maglev trains may be the transportation of the future.
15. The author includes the italicized introduction to
16. compare different kinds of trains.
17. suggest the idea of a floating train.
18. identify the importance of magnets.
19. provide details about magnetic power.
20. According to the article, how are Maglev trains DIFFERENT from regular trains?
21. Maglev trains travel faster.
22. Maglev trains use more energy.
23. Maglev trains are less expensive.
24. Maglev trains do not carry passengers.

Answer Key:

1. Correct Answer C; DOK 2
2. Correct Answer D; DOK 1
3. Correct Answer C; DOK 2
4. Correct Answer A; DOK 2
5. Correct Answer B; DOK 2
6. Correct Answer B; DOK 2
7. Correct Answer A; DOK 1
8. Correct Answer D; DOK 3
9. Correct Answer B; DOK 2
10. Correct Answer A; DOK 2